

A statistical approach has its pluses and minuses, as does any other. Turning to the minuses first, a statistical analysis normally leads one to consider uniform plasmas almost exclusively. Thus there are excellent treatments of the dielectric properties of uniform plasmas (chapters 3, 4, 5) and of microinstabilities in uniform plasmas (chapter 7). However, the treatment of non-uniform plasmas leaves much to be desired. Orbit theory is given short shrift, and indeed it is not clearly pointed out that the dielectric "drift" is not a particle drift. One looks in vain for mention of the δW method, of MHD equations or a general treatment of interchange instabilities. In all fairness, the author has clearly called attention to these omissions in his preface.

On the plus side, the author really comes into his own in his discussion of fluctuations (chapter 9) and relaxation processes (chapter 10). The chapter on transient processes is also excellent, especially in the treatment of plasma echoes. This book, if nothing else, will also be an excellent reference source for material on dielectric screening. The last chapter, "plasma turbulence," is based almost entirely on original work by Ichimaru and his coworkers.

As I mentioned earlier, the "flow" of the writing is very good. At every stage, the author gives physical interpretations of the results. His background in solid-state plasma physics also enriches the choice of illustrations and adds depth to several of his discussions.


I can certainly recommend this book as an excellent text or backup source for a statistically oriented graduate plasma course. It will not do as well for a course that is more fluid oriented but would remain an invaluable reference for dielectric behavior, waves, fluctuations and relaxation.

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Superconducting Materials

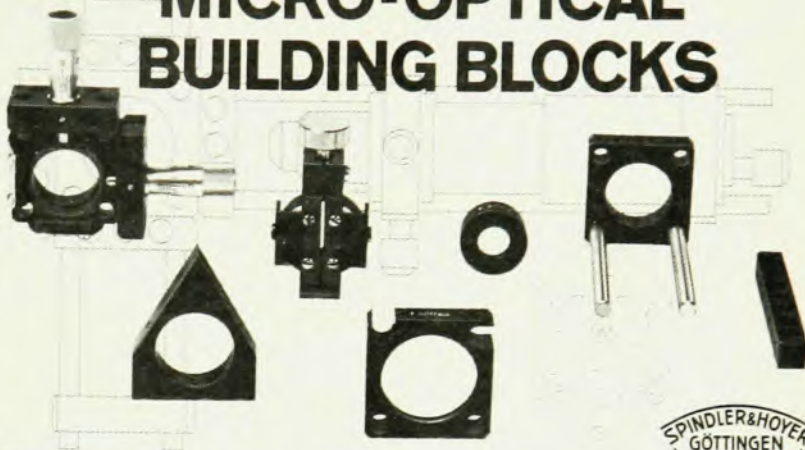
E. M. Savitskii, V. V. Baron, Yu. V. Efimov,
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459 pp. Plenum, New York,
1973. \$27.50

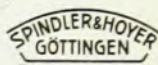
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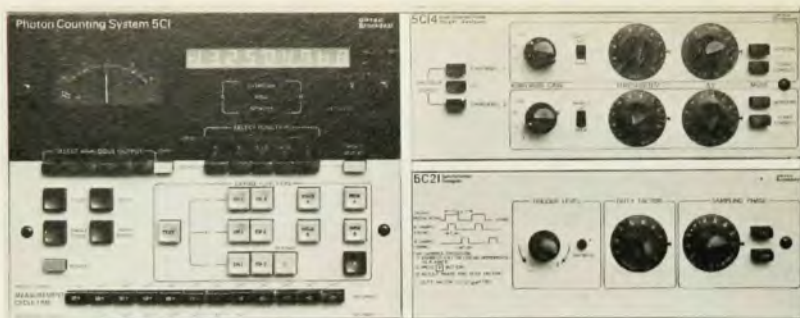
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ing properties depend on many factors in an interdependent way, this is in practice a problem of great complexity.

The main sections of the book are collections and systematizations of data concerning superconducting elements, solid solutions and compounds. Because a great deal of metallurgical and crystallographic data are given to supplement information on superconducting properties, the authors have in fact produced a greatly expanded version of Ben Roberts's excellent compilations. This observation is no criticism, since an "Annotated Roberts" will be welcomed by workers in the field. Other sections deal with measurement techniques, fabrication techniques and a consideration of applications. There is also a sensibly short section on the theory of superconductivity, which is appropriately slanted toward experimental aspects.

Our major criticism of this book is that it is somewhat out of date. This is inevitable for a translated work dealing with a rapidly changing field. Thus, the authors do not discuss the superconductivity of the elements lutetium (under pressure) and chromium (ion-deposited). Neither are the recent discoveries of rather high transition temperatures in the compounds PbMo_3S_4 , LiTi_2O_4 , MoN , Th_4H_{15} , PdH , and especially Nb_3Ge (22.3 K).

Incidentally, there is also no mention of any methodology for discovering these new kinds of superconductors—that's because there isn't one! We must also mention that the book suffers from the lack of a comprehensive index.

In spite of these criticisms, we feel that *Superconducting Materials* will be a useful book for all sorts of people. We recommend it highly to both experts and aspiring experts in the science of superconducting materials; after all, it is the only book of its kind.

A. C. LAWSON

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